

collotype plates, each containing several figures reproduced from photographs of mounted specimens, enlarged by about fifteen diameters. The pipes and smoking customs of the American aborigines form the subject of a paper by Mr. J. D. McGuire. Mr. W. Tassin contributes a descriptive catalogue of minerals classified according to their chemical and physical properties. Easter Island and its inhabitants are described by Dr. G. H. Cooke. Dr. O. T. Mason has a short paper on the forms of the man's knife among North American Indians, and Dr. Thomas Wilson describes arrowpoints, spearheads, and knives of prehistoric times, his paper being illustrated by sixty-five plates, and two hundred text figures. Each of the papers is filled with information, and their attractive setting will excite the unstinted admiration of every student of science who sees the volume.

SEVERAL new editions of established scientific works have lately been received. The sixteenth edition of "Kirkes' Hand-book of Physiology," by Prof W. D. Halliburton, has just been published by Mr. John Murray. The fifteenth edition was only published a year ago, so few changes were necessary; but where required, the subject-matter has been brought up to date.—The fourth German edition of Prof. O. Hammarsten's "Text-book of Physiological Chemistry" has been translated by Prof. J. A. Mandel, New York University. The translation, which is published by Messrs. J. Wiley and Sons, is now in its third edition, and most of the available literature up to April last year is taken into account.—A second and enlarged edition of Prof. S. P. Thompson's work on "Polyphase Electric Currents and Alternate Current Motors" has been published by Messrs. E. and F. N. Spon, Ltd. The book has undergone revision, and has been improved in several respects. The chapters on graphic theory have been developed by Mr. Miles Walker, and the theory is now presented in such a shape as to be directly available for practical calculations. Many of the illustrations are new, and coloured plates are now used to elucidate various types of polyphase windings.—The third edition of Prof. J. R. Ainsworth Davis's book on "The Flowering Plant, as illustrating the First Principles of Botany" has been published by Messrs. C. Griffin and Co., Ltd. New illustrations have been added; and also a chapter on ferns and mosses, which, though not comprehended by the title, will assist students to understand the life-history and classificatory position of flowering plants.—The first part of a second revised and enlarged edition of Dr. Julius Wiesner's work on "Die Rohstoffe des Pflanzenreiches" has been published by W. Engelmann, Leipzig. The first edition appeared in 1873, and it is expected that the present one will be completed during this year. The book appeals more particularly to students of economic botany and pharmacy.—A revised edition of "The Photographer's Note-book and Index, with Tables and Exposure Rules," by Sir David Salomons, Bart., has been issued by Messrs. Marion and Co.

SINCE the discovery by Curtius of the remarkable compound of hydrogen and nitrogen, hydrazoic acid, numerous attempts have been made to obtain from it the condensation product N_6 , and during the discussion at a recent meeting of the Chemical Society, Prof. Ramsay gave a short account of some experiments made in this direction in his laboratory by the interaction of silver azoimide and iodine. The wished-for substance could not be isolated, but Prof. Hantzsch, in the current number of the *Berichte*, has now succeeded in isolating a definite iodide of nitrogen from the products of this reaction. By working at a low temperature and as rapidly as possible in the presence of ether, the new iodide is taken into solution by the latter, and can be obtained as a yellowish solid in minute quantities, not exceeding 0.2 gram, by the rapid evaporation of the ether. The solid is too unstable to submit to analysis, but an examination of

the solution showed that its composition was N_3I . As might be expected from this formula, the iodide is violently explosive, 0.2 gram on one occasion completely pulverising a glass desiccator. Attempts to prepare N_6 by the action of the iodide upon silver azoimide, or by the spontaneous decomposition of the iodide, were unsuccessful.

THE theory of electrolytic solution pressure of Nernst has opened a wide field of research, and has led to many interesting developments. It is still, however, open to question whether the osmotic pressure analogy has not been pushed too far, and in the current number of the *Zeitschrift für Physikalische Chemie* is a short criticism by Prof. Lehfeldt on this point. Taking the solution pressures calculated for zinc, nickel and palladium from the observed electromotive forces as 9.9×10^{18} , 1.3 , and 1.5×10^{-36} atmospheres respectively, it is pointed out that although the first number is enormous it is not necessarily impossible. It is otherwise with the figure for palladium. Since pressure is a statistical effect, a considerable number of molecules must act on unit area. 1.5×10^{-36} atmospheres would give one or two molecules of palladium in a volume the size of the earth.

THE fact that such common alkaloids as cocaine, atropine and nicotine are derivatives of pyrrol lends considerable interest to syntheses of derivatives of the latter substance. Pyrrol-aldehyde, the analogue of benzaldehyde and furfuraldehyde, has hitherto been wanting, but its preparation has now been successfully attempted by Bamberger and Djerdjian by the use of Reimer's reaction with chloroform and potash, and is described by them in a preliminary note in the current number of the *Berichte*. The new aldehyde forms a well-crystallised hydrate, oxime, and also an insoluble sodium sulphite compound, but differs markedly from its analogues in crystallising readily, prisms several centimetres long being obtainable, and also in possessing no smell. Many important synthetical products may be expected with pyrrol-aldehyde as a starting-point.

THE additions to the Zoological Society's Gardens during the past week include a Vervet Monkey (*Cercopithecus lalandii*), a Serval (*Felis serval*) from South Africa, presented by Mr. J. E. Matcham; a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, presented by Mr. Dudley B. Myers; a Common Marmoset (*Hapale jacchus*) from South-east Brazil, presented by Miss M. C. Glover; a Greater Sulphur-crested Cockatoo (*Cacatua galerita*) from Australia, presented by Lieut.-Colonel Hopton; four Black-bellied Sand-Grouse (*Pterocles arenarius*) from Spain, presented by Mr. G. P. Torrens; a Purplish Death Adder (*Pseudechis porphyriacus*) from Australia, purchased.

OUR ASTRONOMICAL COLUMN.

OCCULTATION OF NEPTUNE.—There will be an occultation of Neptune on the evening of March 8, the moon having just passed its first quarter.

	Mean Time.	Angle from	
		North Point.	Vertex.
Disappearance	6 13	101	107
Reappearance	7 34	268	249

As the moon passes the meridian of London about 6.30 p.m., the occultation is a favourable one for observation should the weather permit.

OPPOSITION OF MINOR PLANET (434), HUNGARIA.—Herr A. Berberich, of Berlin, gives in the *Astronomische Nachrichten* (Bd. 151, No. 3624) a revised set of elements and the deduced ephemeris of this body, to facilitate its detection during the coming opposition about March 23.

Elements for 1900 March 5, Berlin Mean Time.

$$\begin{aligned} M &= 244 \ 34 \ 15 \cdot 3 \\ \omega &= 122 \ 55 \ 42 \cdot 3 \\ \Omega &= 174 \ 39 \ 17 \cdot 4 \\ i &= 22 \ 30 \ 32 \cdot 0 \\ \phi &= 4 \ 15 \ 30 \cdot 9 \\ \mu &= 1308'' \cdot 6777 \\ \log a &= 0 \cdot 2887826 \end{aligned} \quad \left. \vphantom{\begin{aligned} M \\ \omega \\ \Omega \\ i \\ \phi \\ \mu \end{aligned}} \right\} 1900 \cdot 0$$

Ephemeris for 12h. Berlin Mean Time.

1900.		R.A.			Decl.
		h.	m.	s.	
March 7	...	12	14	55	... -0° 50' 1
11	...	11	56	...	+0° 36' 5
15	...	8	40	...	2 6' 1
19	...	5	13	...	3 37' 3
23	...	12	1	41	5 8' 5
27	...	11	58	10	6 38' 1
31	...	11	54	45	+8 4' 5

CERASKI'S SECOND ALGOL VARIABLE.—In the *Harvard College Observatory Circular*, No. 47, Prof. E. C. Pickering furnishes the additional data respecting this variable which are available from the photometric records of the Henry Draper Memorial. The Moscow photographs furnish the means of determining the period of an interval of four years; the Harvard records increase this interval to nine years. With the aid of the latter it is found that the formula of Prof. Ceraski only satisfies the later observations, and to remedy this the period he gives should be shortened by 0·6m.; the resulting period of 6d. oh. 8·8m. satisfying all the observations since 1890 very accurately, but more observations of the minima will give a still closer value. The period, however, differs so slightly from exactly six days that for a long time the minima cannot be observed in certain longitudes. Accordingly, while observations may be obtained in the ensuing autumn in Europe, or better still in Asia, minima cannot be observed in America until the following year.

Five stars of the Algol class, viz. S Cancri, U Cephei, W Delphini, +45° 3062 and the star here under discussion are especially interesting owing to the large variation in their light, which amounts to about two magnitudes in each case. It is noteworthy that of these two were found by Mdme. Ceraski, and one by her distinguished husband.

THE NEW ODESSA OBSERVATORY.—Herr A. Orbinski, who has been appointed director of the new astronomical observatory at Odessa, has recently issued his first report, dealing with the foundation of the institution, its instrumental equipment, and the scope of the proposed programme of investigation.

The observatory has been established as a branch to the great national institution by the governing body of the Pulkova Observatory, chiefly owing to the efforts of Prof. O. Backlund during 1895 and afterwards.

In the summer of 1897 the building operations were commenced, and in August of the following year, 1898, the transit instrument was installed, the vertical circle being set in position during February 1899. The buildings are three in number—a transit house, and two buildings for housing the meridian marks, or collimators. The instrumental equipment consists of a transit circle, with clock, chronograph and meridian marks, and a vertical circle.

The transit has an objective of 108 mm. aperture and 1·30 m. focal length, by Steinheil, and is furnished with a self-registering micrometer, by Repsold. The meridian marks are situated about 119 metres north and south of the transit pier, and consist of round plates, each pierced with a small hole 1·5 mm. in diameter, which being illuminated from behind by an electric lamp, forms an artificial star of about 2·1 magnitude.

The vertical circle, by Repsold, has a Steinheil objective of 108 mm. aperture and 1·40 m. focal length. Both these instruments are mounted in the same transit house, which is so constructed that, the central portion remaining stationary, the ends may be traversed eastwards and westwards respectively, thus uncovering the instruments.

The programme of the observatory is to be somewhat similar to that at Pulkova, except that observations of stars are to be made alternately with each instrument night by night, and not with both together, the first list of 176 stars being included in the report.

HARTLEY BOTANICAL LABORATORIES OF UNIVERSITY COLLEGE, LIVERPOOL.

AFTER occupying for twelve years small and, in many respects, unsuitable rooms in the old College buildings, the botanical department of University College, Liverpool, is at length to be housed in a new and commodious institute, the munificent gift of Mr. W. P. Hartley, of Aintree, Liverpool.

The site of the new buildings, also purchased by Mr. Hartley for the College, is a very fine one. The buildings have an east frontage of 37 feet and a north frontage of 85 feet. The total height to the eaves is 54 feet, divided into three principal stories, with two mezzanines in addition to a basement.

The main entrance leads through a vestibule, 8 feet wide, into a hall, 23 feet by 20 feet, in which is placed the staircase, 6 feet wide, open by means of a well to the lantern light at the top of the building.

The basement floor is occupied by store-rooms, lavatories and heating chamber.

The ground floor is mainly occupied by the museum, 45 feet long by 34 feet broad. This is surrounded at a height of 10 feet 6 inches by a balcony with open ironwork balustrade, which can be entered from the mezzanine floor or by an iron spiral staircase from the ground floor of the museum. The museum will throughout be fitted with cases made of American canary wood with movable glass shelves. It is intended that these cases shall contain not only morphological specimens illustrative of the scientific aspect of botany, but also specimens of all products of the vegetable kingdom used in the arts, such as timbers, pharmaceutical products, cottons, hemp, flax, and food products, both in the raw and in the manufactured state. It is hoped that by this means the new botanical laboratories will become a centre of information for the general public on matters of economic botany as well as on the more strictly scientific aspects of the science.

The museum will be provided with a lift running to all the floors above, so enabling specimens to be expeditiously and conveniently made available for teaching purposes in the laboratories and class-rooms.

On the ground floor also there is a workshop fitted with lathe, carpenter's bench and tools, so that small repairs may be carried out and simple machinery constructed without necessitating the calling in of special workmen.

There is also, in connection with the museum, a preparation room, in which stock museum jars and boxes will be kept, and in which the various specimens to be exhibited in the museum will be mounted, prepared and labelled.

The first mezzanine floor is partly occupied, as already mentioned, by the museum balcony; but there is also on this floor a small class-room fitted for about twenty students, furnished with the necessary fittings for the teaching of advanced lecture classes; and the herbarium fitted throughout with dust-tight cases and boxes for dried plants. Room is also provided on this floor for a staff lavatory.

On the first floor is placed the large lecture theatre. This room, which is 45 feet long by 34 feet broad, will accommodate 100 students. The seats are raised at the back by a gradually increasing upward curve, and the room is fitted with a specially designed lecture table, carrying electric switches, gas, water, and other needful appliances for public lectures. Opening off the theatre is the professor's private room, with an adjacent private laboratory, both of which will be furnished and equipped with the requisite bookcases, apparatus cases, and laboratory appliances. On this floor also is situated the departmental library, whose shelves will be furnished with not only the best known botanical text-books for reference, but also with several of the more important botanical journals.

The second mezzanine floor carries the research laboratory, the experimental physiology laboratory, and the dark room. These rooms, perhaps the most important in the building, will be fitted with all the more essential appliances for anatomical and physiological research, whilst the dark room will be available both for microphotographic work and for such physiological experiments as can be conducted only in the absence of light.

On the second or top floor is placed the large and magnificently lighted junior laboratory, capable of accommodating sixty-five students at one time, and fitted with specially constructed benches, cases for microscopes and apparatus, and the necessary teaching appliances. There will also be placed on this floor a fully equipped senior laboratory, capable of accom-